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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,260	02/26/2001	Yukihiko Okumura	201514US2PCT	2413

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EXAMINER

LEVITAN, DMITRY

ART UNIT PAPER NUMBER

2662

DATE MAILED: 04/20/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/720,260

Applicant(s)

OKUMURA ET AL.

Examiner

Dmitry Levitan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-24 is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7, 9-12.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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Preliminary amendment, filed 01/10/01, has been entered. Claims 1-24 remain pending.

Drawings

1. Figures 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 100 and 130. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to because Fig. 22 contains a reference in foreign language. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Okumura (WO 96/26582).

Okumura teaches a method and a data multiplexer (Fig. 1A and abstract), comprising:

A coding step of coding input data for each input channel (error detecting encoding circuit 102);

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A step of multiplexing said data (multiplexing circuit 104), which is coded;

A step of performing an interleaving process on this data (interleaving circuit 106), which is multiplexed; and

A step of outputting said data on which said interleaving process is performed to a physical channel (transmitting data sequence as disclosed in the abstract).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-7 and 9- 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura in view of Rhines (US 5,392,299).

6. Regarding claims 2, 6, 9 and 13, Okumura teaches all the limitations of claims 1 and 7 including writing data into interleaver and reading data from the interleaver (Fig. 3).

Okumura does not teach randomizing columns in the interleaver.

Rhines teaches randomizing/shuffle rows in interleaver (Fig. 4 A and B 9:54-63) and suggest other shuffling algorithms (11:22-34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add randomizing columns to the system of Okumura as a design choice, because either randomizing columns or randomizing rows works in the system as well.

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7. Regarding claims 6 and 13, Rhines teaches using a pattern, an algorithm defining order of shuffling/randomizing, (inherently part of the shuffling process, because pattern is essential for restoration of the signal on the receive side) for randomizing suitable for transmission (transmit part of the system on Fig. 2).

8. Regarding claims 3 and 10, Okumura teaches number of columns of the interleaver (M columns on Fig. 3) is an integral multiple of the number of slots in an output frame (M slots in a frame on Fig. 4 and 24:7-25, 25:1-8).

9. Regarding claims 4, 5, 11 and 12, Okumura and Rhines teaches all the limitations of claims 1, 2, 8 and 9.

Okumura and Rhines do not teach the number of columns of the interleaver is, 15, 16, 30 or 32. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the number of columns of the interleaver 15, 16, 30 or 32 in the system of Okumura and Rhines as a design choice, because 8 or 48 columns will work in the system as well..

10. Regarding claims 7 and 14, Okumura teaches all the limitations of claims 1 and 7.

Okumura does not teach performing second interleaving process (second/inner interleaver 110 on Fig. 2 and 4:25-30) and segmenting data on which another interleaving process is performed (data plane of the second/inner interleaver 5:8-14).

Rhines teaches performing another interleaving process and segmenting data on which another interleaving process is performed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add performing another interleaving process and segmenting data on which another interleaving process is performed of Rhines to the system of Okumura to improve the system error correction.

Allowable Subject Matter

11. Claims 15-24 are allowed.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Okumura	US005896374	Variable rate transmission method, transmitter and receiver.
Okumura	WO96/26582	Variable rate transmission method, transmitter and receiver
Rhines	US005392299A	Triple orthogonally interleaved error correction system.
Shibutani	US006631491B1	Interleaving method and apparatus.
Okawa	US006097711A	DS-CDMA transmission method.
Adachi	US005850393A	Transmitter and receiver for mobile communication system.
Sinha	US006357029B1	Joint multiple program error concealment.
Baggen	US005799033	Method of error protected transmission.
Forney	US003652998	Interleavers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dmitry Levitan whose telephone number is 703-305-4384. The examiner can normally be reached on 8:30 to 4:30.

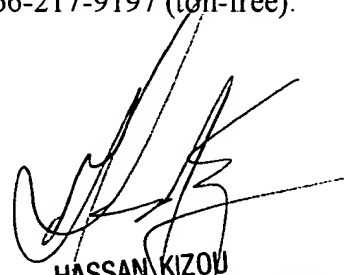
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703-305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Dmitry Levitan
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04/13/04.



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